Name _____ Period _____

# Dichotomous Key Activity

7th Grade Science
Unit 11

**Objective**
Identify an organism by analyzing it's structural characteristics and using a dichotomous key.

**Background Information**
A dichotomous key is a tool used to identify all the different kinds of organisms within the six kingdoms of living organisms. It is a branching key in which there are two or more choices in each branch. The last choice in the key will identify what the scientist is trying to determine. A dichotomous key can be used to identify animals, plants, and other organisms and objects. Dichotomous keys work best when they are divided into groups and then further divided into smaller groups. Some dichotomous keys used to identify plants or animals ask *yes* or *no* questions. They also rely on looking for clear differences. Questions in the dichotomous key are numbered and answered in order.

**Procedure**

1. Read the following paragraph to gain some background knowledge of whales (cetaceans).

   Whales, dolphins, and porpoises belong to the same large group of mammals called cetaceans. Cetaceans share common characteristics that enable them to live successfully in aquatic environments. They all have paddle-shaped front limbs, flattened tails with horizontal flukes at the tip, a streamlined body shape, basically hairless body, thick blubber layer below the skin filled with fat and oil, external nostril (blowhole) on the top of the head, and a short, thick, stiff neck. Many of these characteristics are adaptations to reduce drag for fast swimming. Cetaceans are further divided into two subgroups. Baleen cetaceans have a fibrous type material that hangs down from the roof of their mouth and is used to filter feed on small animals called krill. Toothed cetaceans have large teeth and feed on other large animals and fish.

2. Familiarize yourself with the structures of the whale in *Figure A*.

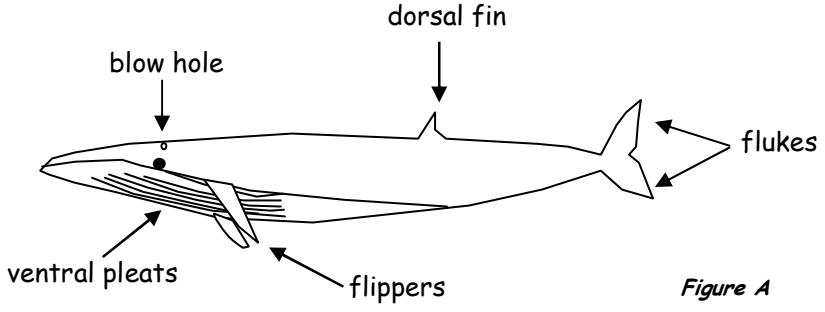



***Figure A***

3. Beginning with cetacean #1, read the first set of paired statements (1a and 1b) and select one statement in the pair that best describes cetacean 1.
4. Follow the directive at the end of the statement you selected (go to . . .) Read the next set of paired statements and select the statement that best fits cetacean 1.
5. Continue this process until you have no more choices. When you have completed the process, you will have "keyed" or identified the cetacean. Write the name of the animal in the table on the next page.
6. Repeat steps 3-5 to key the remaining cetaceans.
7. Remember these pointers as you complete the activity:
    a. Always begin with statements 1a and 1b every time you key a new animal.
    b. If you seem to be at a dead end, you may have taken a wrong turn earlier. Start over and carefully reconsider each step
    c. As you are keying a particular animal, look at the other diagrams to help you observe the differences in the same structures on different animals. For example, how do the dorsal fins differ in cetaceans 1, 2, and 5?

**Cetacean Dichotomous Key**

1a. has teeth----------go to 2
1b. has baleen; ventral pleats present----------go to 3

2a. dorsal fin small and/or rounded or absent----------go to 4
2b. distinct (obvious)dorsal fin ----------go to 5

3a. rough, bumpy areas present on head----------go to 6
3b. no rough, bumpy areas present on head----------go to 7

4a. small dorsal fin; square-shaped head is 1/3 length of body ---------- sperm whale
4b. dorsal fin absent; small head with short neck region ---------- beluga whale

5a. dorsal fin much taller than wide; distinct white patches behind eyes and dorsal fin---- killer whale
5b. 3 sides of dorsal fin more or less equilateral in length ----------go to 8

6a. long white flippers are 1/3 body length ---------- humpback whale
6b. short flippers less than 1/3 body length ---------- right whale

7a. large white strip present on top of flippers; curved white patterns behind head -------minke whale
7b. no large white strip on flippers; gray shading patterns behind head---------- fin whale

8a. short beak present ----------bottlenose dolphin
8b. beak absent ---------- harbor porpoise

| Cetacean # | Name |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |

**Post-Activity Questions**

1. Why do you believe that it is important to classify animals?

2. What is the purpose of a dichotomous key?

3. In your own words, explain how to use a dichotomous key.

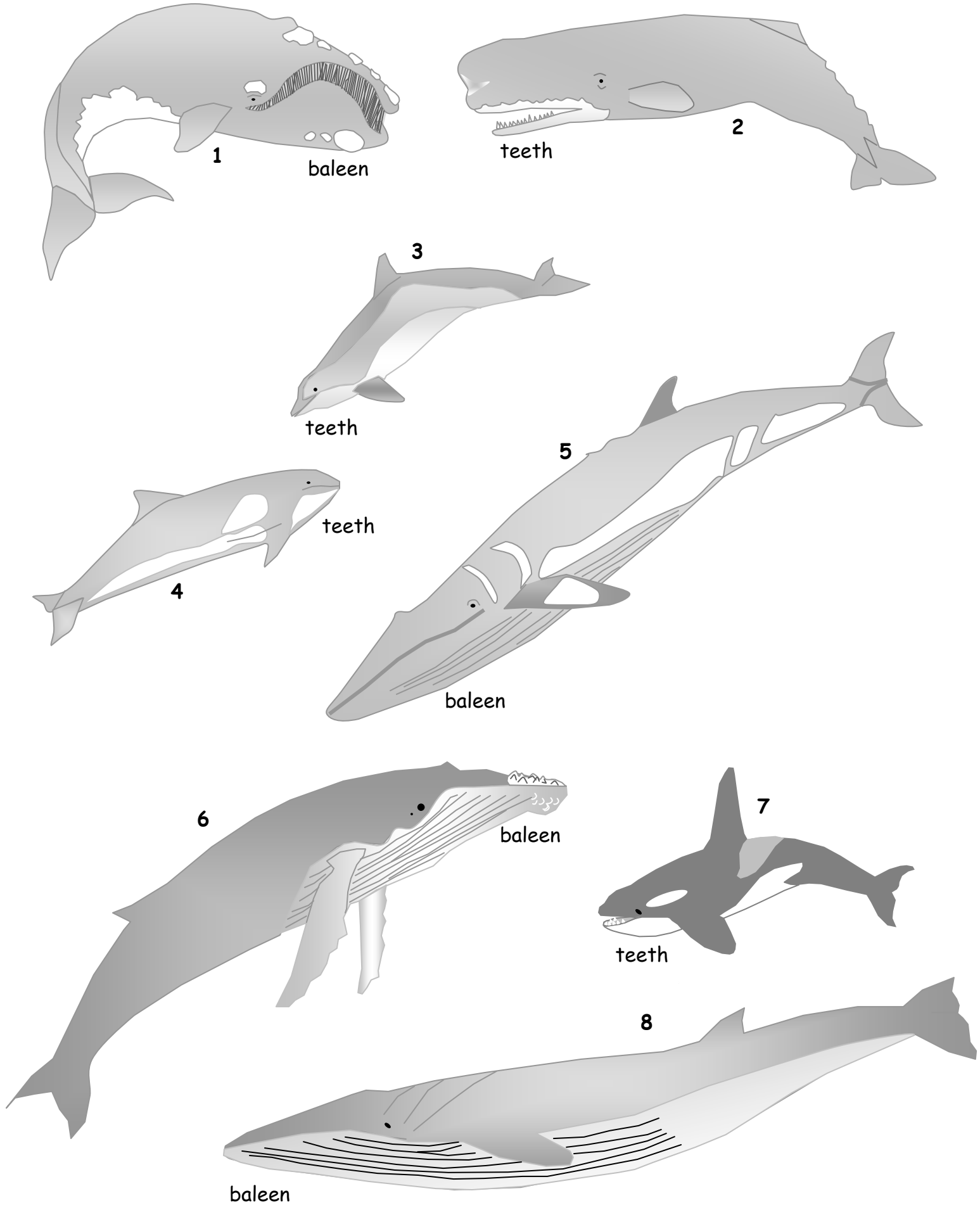
4. How does the first set of descriptions (1a and 1b) divide cetaceans into two groups?

5. Once you narrowed your cetacean selection down to the final two, were the two cetaceans similar or very different?

6. Are organisms of the same family similar or very different?

**Further Practice**

Click on the following link and practice using a more complex dichotomous key!
http://www.uwsp.edu/cnr/leaf/Treekey/tkframe.htm


1
baleen
2
teeth
3
teeth
4
teeth
5
baleen
6
baleen
7
teeth
8
baleen